Infertility and Assisted Reproduction presents, in detail, the techniques and philosophies behind medical procedures of infertility and assisted reproduction. Assisted reproductive technology is available to two-thirds of the world’s population, and world-class experts in their field, representing research from 18 different countries, have contributed to this groundbreaking textbook. This is one of the most rapidly changing and hotly debated fields in medicine. Different countries have different restrictions on the research techniques that can be applied to this field, and, therefore, experts from around the world bring varied and unique authorities to different subjects in reproductive technology. This comprehensive textbook encompasses the latest research into the physiology of reproduction, infertility evaluation and treatment, and assisted reproduction and concludes with perspectives on the ethical dilemmas faced by clinicians and professionals. This book is designed to be a definitive resource for those working in the areas of reproductive medicine the world over.

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Dr. Botros R. M. B. Rizk
To Mary, Christopher, Christine, David, Gabrielle, and Danielle for their love and inspiration

Dr. Juan A. Garcia-Velasco
To Carmela, Maria, and Jaime, my daily inspiration

Dr. Hassan N. Sallam
To my wife, Magda; my daughters, Yasmine and Shahira; and my son, Nooman,
whose sacrifice for my work can never be repaid
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This text on infertility and assisted reproduction is truly international. There are authors from 18 nations. This reflects the widespread availability of assisted reproductive technology (ART) and indicates that experts are found worldwide. Indeed, in a compilation of legislation and guidelines concerning ART, sponsored by the International Federation of Fertility Societies and published as a supplement to *Fertility and Sterility* in 2007 under the title “Surveillance 07,” it was noted that two-thirds of the world’s population lived in countries where ART is available. To be sure, it needs to be added that accessibility within various countries varies widely.

“Surveillance 07” also found that there was a wide variation among nations in what society really wished to survey and control. Indeed, this variation has had some interesting and unexpected consequences. For example:

- In Italy, cryopreservation of fertilized eggs is prohibited. This has stimulated investigation into the improvement of cryopreservation or vitrification for oocytes (see chapter by Porcu).
- In Belgium, among those qualified for insurance coverage provided by the government, no more than a single fertilized egg can be transferred in the first IVF attempt, provided the patient is younger than 36 years of age. This has provided and given stimulus to the evaluation of elective single embryo transfer (eSET). It turns out that eSET offers a good pregnancy rate and largely eliminates multiples (see chapter by Gerris).

The complete physician does not practice medicine like a cook who depends on a cookbook to prepare a special dish. To be sure, the physician needs practical knowledge, but the complete physician also must know the underlying physiology and pathology of the problem at hand in order to select the best solution. Thus, this new text can make the physician complete. For example, as to the matter of implantation after transfer of a fertilized egg, this text addresses the practical (see chapter by deZiegler) aspects and the molecular aspect (see chapter by Simon).

To understand controlled ovarian hyperstimulation prior to IVF, it is necessary to understand the basic physiology (see chapters by Makrigiannakis and Messinis). Only with this information can one understand the ins and outs of the various types of stimulation and the response thereto (see chapters by Fauser, Macklon, Aboulghar, and Nardo).

Reproductive medicine in contrast to other subspecialties deals with hot-button ethical and public policy issues simply because it deals with reproduction, which society regards as special and different. The complete physician must understand the patient’s concerns in this area (see chapter by Shenfeld). All in all, the physician can become complete by having this text at hand.
The readers of this text will encounter a comprehensive and perspicacious view of the discipline of reproductive medicine as revealed by leaders in their respective fields. The editors have assembled a talented group of authors spanning six geographic continents. Some sections of the book – for example, its second section on infertility – are comprehensive enough to stand on their own. The section begins with the evolution of the female and covers in detail the roles of endoscopy, hysteroscopy, and laparoscopy in the management of infertility. The following section deals with ultrasonography of both the female and male, which is followed by a cutting-edge section on the evaluation of the infertile male, beginning with standards of current clinical management and ending with future implications for developing DNA technology. Subsequent sections focus on the physiology of ovulation and the pharmacological agents prescribed by gynecologists today, in addition to a discussion of future pharmacological advances that have the potential to significantly alter treatment strategies. Other clinical areas discussed include the medical management of endometriosis, the relationship of polycystic ovaries to infertility, and the status of premature ovarian failure. A comprehensive assessment on the state of the art in assisted reproduction is detailed in the third section of the book. This is the expertise of one of its editors, Dr. Botros R. M. B. Rizk, so it is perhaps not too surprising that this topic did receive significant attention. More esoteric topics, or at least topics that are not usually found in texts of this genre, include cryobiology, herbal Chinese medicine and assisted reproductive technology (ART), various congenital malformations and chromosomal abnormalities associated with ART, and a concluding section entitled “Ethical Dilemmas in Fertility and Assisted Reproduction,” which evaluates stem cell research from scientific, legal, and religious perspectives. In other words, there is something in this textbook for everyone interested in reproductive biology, whether a novice or an expert in the field.
The past three decades have witnessed a transformation in reproductive medicine from science fiction to one of the most advanced medical disciplines. Our textbook is a confirmation of the tremendous achievements in scientific research that changed the course of our clinical practice. Thirty years of in vitro fertilization (IVF) was celebrated this year in Alexandria, honoring Robert Edwards specifically. More than four million IVF babies have been born worldwide. The doors that were opened by Robert Edwards and Patrick Steptoe lead to many miracles. Intracytoplasmic sperm injection, in vitro maturation, oocyte vitrification, pre-implantation genetic diagnosis, and ovarian transplantation are dreams that were fulfilled. Many couples still have no hope of having their own families and demand us to keep moving forward.

The authors of the chapters of this book have lead the world for the three decades. They contributed their finest and most advanced research. We find in every one of them a sincere desire to uphold the ethics and the respect in our society. The friendship and cordiality between them has been amazing. They represented the six continents truly, and many of them have worked in more than one continent. It is not surprising that they worked together in such an elegant and a unique way. The different chapters are individualized in style, but the spirit of the book has united them. From reproductive physiology to surgery and assisted reproduction, the authors move with great elegance. The ethical and moral issues have been thoughtfully considered. To every author we acknowledge his or her expertise and admire and enjoy their friendship. We place in your hands, our readers, a text that covers the present state of the art and gives you a glimpse of the future, confirming your instincts and stimulating your desire for knowledge. We hope that you enjoy reading it as we have enjoyed editing it.